

What is claimed is:

1. An isolated nucleic acid sequence comprising a polynucleotide encoding a plant lecithin:cholesterol acyltransferase-like polypeptide or fragment thereof.
2. The isolated nucleic acid sequence of claim 1, wherein said plant lecithin:cholesterol acyltransferase-like polypeptide is selected from the group consisting of *Arabidopsis*, soybean and corn.
3. An isolated nucleic acid sequence comprising a polynucleotide encoding a plant acyl CoA:cholesterol acyltransferase-like polypeptide.
4. The isolated nucleic acid sequence of claim 3, wherein said polynucleotide is SEQ ID NO: 42 or degenerate variants thereof.
5. The isolated nucleic acid sequence of claim 1, wherein said polynucleotide is selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 43, 44, 45, 46, 47, 48, 49, 50, 51, 73 and 75 or degenerate variants thereof.
6. An isolated nucleic acid sequence consisting essentially of SEQ ID NO: 2, 4, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51 73 or 75.
7. An isolated nucleic acid sequence consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51 73 or 75.
8. An isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of:
  - a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO 3 or SEQ ID NO 3 with at least one conservative amino acid substitution;
  - b) SEQ ID NO: 2;
  - c) an isolated polynucleotide that has at least 70% sequence identity to SEQ ID NO: 2;

- d) an isolated polynucleotide that has at least 80% sequence identity to SEQ ID NO: 2;
- 10 e) an isolated polynucleotide that has at least 90% sequence identity to SEQ ID NO: 2;
- f) an isolated polynucleotide that has at least 95% sequence identity to SEQ ID NO: 2;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 2;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 2 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
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9. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal, R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from the group consisting of:
- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 3 or SEQ ID NO: 3 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 2;
- c) an isolated polynucleotide that has at least 70% sequence identity to SEQ ID NO: 2;
- 10 d) an isolated polynucleotide that has at least 80% sequence identity to SEQ ID NO: 2;
- e) an isolated polynucleotide that has at least 90% sequence identity to SEQ ID NO: 2;
- f) an isolated polynucleotide that has at least 95% sequence identity to SEQ ID NO: 2;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 2;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and

- 20 i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 2 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
10. An isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of:
- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 5 or SEQ ID NO: 5 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 4;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 4;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 4;
- 10 e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 4;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 4;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 4;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 4 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
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11. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal, R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from the group consisting of:
- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 5 or SEQ ID NO: 5 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 4;

- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 4;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 4;
- e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 4;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 4;
- g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 4;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 4 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
12. An isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of:
- a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 7 or SEQ ID NO: 7 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 6;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 6;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 6;
- e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 6;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 6;
- g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 6;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and

i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 6 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.

13. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal, R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from the group consisting of:

a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 7 or SEQ ID NO: 7 with at least one conservative amino acid substitution;

b) SEQ ID NO: 6;

c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 6;

d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO:6;

e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 6;

f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 6;

g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 6;

h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and

i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 6 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.

14. An isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of

a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 9 or SEQ ID NO: 9 with at least one conservative amino acid substitution;

b) SEQ ID NO 8;

- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 8;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 8;
- 10 e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 8;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 8;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 8;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 8 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
15. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal, R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from the group consisting of:
- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 9 or SEQ ID NO: 9 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 8;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 8;
- 10 d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 8;
- e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 8;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 8;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 8;

- 20 h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c),  
(d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ  
ID NO: 8 and encodes a plant lecithin:cholesterol acyltransferase-like  
polypeptide.
16. An isolated nucleic acid sequence comprising a polynucleotide selected from the  
group consisting of:
- a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 74 or SEQ  
ID NO: 74 with at least one conservative amino acid substitution;
- 5 b) SEQ ID NO: 73;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID  
NO: 73;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID  
NO: 73;
- 10 e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID  
NO: 73;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID  
NO: 73;
- g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under  
stringent conditions to SEQ ID NO: 73;
- 15 h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c),  
(d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ  
ID NO: 73 and encodes a plant lecithin:cholesterol acyltransferase-like  
polypeptide.
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17. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the  
formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal,  
R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from  
the group consisting of:
- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 74 or SEQ  
ID NO: 74 with at least one conservative amino acid substitution;

- 10 b) SEQ ID NO: 73;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 73;
- 10 d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 73;
- e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 73;
- 15 f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 73;
- g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 73;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- 20 i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 73 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.

18. A isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of:

- 5 a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 76 or SEQ ID NO: 76 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 75;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 75;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 75;
- 10 e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 75;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 75;
- 15 g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 75;



- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 75 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
19. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal, R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0-3000, and R<sub>2</sub> is selected from the group consisting of:
- a) an isolated polynucleotide encoding a polypeptide of SEQ ID NO: 76 or SEQ ID NO: 76 with at least one conservative amino acid substitution;
- b) SEQ ID NO: 75;
- c) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 75;
- d) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 75;
- e) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 75;
- f) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 75;
- g) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 75;
- h) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), (f) or (g); and
- i) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 75 and encodes a plant lecithin:cholesterol acyltransferase-like polypeptide.
20. An isolated nucleic acid sequence comprising a polynucleotide selected from the group consisting of:
- a) SEQ ID NO: 42 or a degenerate variant thereof;

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- b) an isolated polynucleotide having at least 70% sequence identity with SEQ ID NO: 42;
- c) an isolated polynucleotide having at least 80% sequence identity with SEQ ID NO: 42;
- d) an isolated polynucleotide having at least 90% sequence identity with SEQ ID NO: 42;
- e) an isolated polynucleotide having at least 95% sequence identity with SEQ ID NO: 42;
- f) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 42;
- g) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), or (f); and
- h) an isolated polynucleotide that hybridizes under stringent conditions to SEQ ID NO: 42 and encodes an acyl CoA:cholesterol acyltransferase-like polypeptide.
21. An isolated nucleic acid sequence consisting essentially of a polynucleotide of the formula 5' X-(R<sub>1</sub>)<sub>n</sub>-(R<sub>2</sub>)<sub>n</sub>-(R<sub>3</sub>)<sub>n</sub>-Y 3', where X is hydrogen, Y is hydrogen or a metal R<sub>1</sub> and R<sub>3</sub> are any nucleic acid, n is an integer between 0 and 3000, and R<sub>2</sub> is selected from the group consisting of:
- a) SEQ ID NO: 42 or degenerate variants thereof;
- b) an isolated polynucleotide having at least 70% sequence identity to SEQ ID NO: 42;
- c) an isolated polynucleotide having at least 80% sequence identity to SEQ ID NO: 42;
- d) an isolated polynucleotide having at least 90% sequence identity to SEQ ID NO: 42;
- e) an isolated polynucleotide having at least 95% sequence identity to SEQ ID NO: 42;
- f) an isolated polynucleotide of at least 10 nucleic acids that hybridizes under stringent conditions to SEQ ID NO: 42;
- g) an isolated polynucleotide complementary to a polynucleotide of (a), (b), (c), (d), (e), or (f); and

- 20      h)      an isolated polynucleotide that hybridizes under stringent conditions to SEQ  
ID NO: 42 and encodes an acyl CoA:cholesterol acyltransferase-like  
polypeptide.
22.      A recombinant nucleic acid construct comprising a regulatory sequence operably  
linked to polynucleotide encoding a lecithin:cholesterol acyltransferase-like  
polypeptide or a fragment thereof.
23.      The recombinant nucleic acid construct of claim 22, wherein said lecithin:cholesterol  
acyltransferase-like polypeptide is a plant lecithin:cholesterol acyltransferase-like  
polypeptide.
24.      A recombinant nucleic acid construct comprising a regulatory sequence operably  
linked to a polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like  
polypeptide.
25.      The recombinant nucleic acid construct of claim 24, wherein said acyl  
CoA:cholesterol acyltransferase-like polypeptide is a plant acyl CoA:cholesterol  
acyltransferase-like polypeptide.
26.      The recombinant construct of claim 22, wherein said regulatory sequence comprises a  
heterologous regulatory sequence.
27.      The recombinant construct of claim 24, wherein said regulatory sequence comprises a  
heterologous regulatory sequence.
28.      The recombinant construct of claim 22, wherein said regulatory sequence is functional  
in a plant cell.
29.      The recombinant construct of claim 24, wherein said regulatory sequence is functional  
in a plant cell.
30.      The recombinant construct of claim 22, further comprising a termination sequence.

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31. The recombinant construct of claim 24 further comprising a termination sequence.
32. The recombinant construct of claim 22 wherein said polynucleotide is selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 43, 44, 45, 46, 47, 48, 49, 50, 51, 73 and 75.
33. The recombinant construct of claim 24, wherein said polynucleotide is selected from the group consisting of SEQ ID NO: 33 and 42.
34. The recombinant construct of claim 22, wherein said regulatory sequence comprises a constitutive promoter.
35. The recombinant construct of claim 24, wherein said regulatory sequence comprises a constitutive promoter.
36. The recombinant construct of claim 22, wherein said regulatory sequence comprises an inducible promoter.
37. The recombinant construct of claim 24, wherein said regulatory sequence comprises an inducible promoter.
38. The recombinant construct of claim 22, wherein said regulatory sequence is selected from the group consisting of a tissue specific promoter, a developmentally regulated promoter, an organelle specific promoter, and a seed specific promoter.
39. The recombinant construct of claim 24, wherein said regulatory sequence is selected from the group consisting of a tissue specific promoter, a developmentally regulated promoter, an organelle specific promoter, and a seed specific promoter.
40. A host cell containing the recombinant construct of claim 22 or 24.

41. The host cell of claim 40, wherein said host cell is selected from the group consisting of plant cells, animal cells, insect cells, yeast, bacteria, bacteriophage and viruses.
42. The host cell of claim 40, wherein said host cell is a plant cell.
43. The host cell of claim 40, wherein said host cell expresses a lecithin:cholesterol acyltransferase-like polypeptide or an acyl CoA:cholesterol acyltransferase-like polypeptide.
44. The host cell of claim 43, wherein said cholesterol acyltransferase-like polypeptide is a plant acyltransferase-like polypeptide.
45. A plant comprising at least one host cell of claim 40.
46. The progeny of a plant of claim 45.
47. A seed from the plant of claim 45.
48. A plant comprising the recombinant construct of claim 22 or 24.
49. The progeny of a plant of claim 48.
50. A seed from the plant of claim 48.
51. A purified polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 3, SEQ ID NO: 3 with at least one conservative amino acid substitution, SEQ ID NO: 5, SEQ ID NO: 5 with at least one conservative amino acid substitution, SEQ ID NO: 7, SEQ ID NO: 7 with at least one conservative amino acid substitution, SEQ ID NO: 9, SEQ ID NO: 9 with at least one conservative amino acid substitution, SEQ ID NO: 74, SEQ ID NO: 74 with at least one conservative amino acid substitution, SEQ ID NO: 76 and SEQ ID NO: 76 with at least one conservative amino acid substitution.

52. A purified immunogenic polypeptide comprising at least 10 consecutive amino acids from an amino acid sequence selected from the group consisting of SEQ ID NO: 3, SEQ ID NO: 3 with at least one conservative amino acid substitution, SEQ ID NO: 5, SEQ ID NO: 5 with at least one conservative amino acid substitution, SEQ ID NO: 7, SEQ ID NO: 7 with at least one conservative amino acid substitution, SEQ ID NO: 9, SEQ ID NO: 9 with at least one conservative amino acid substitution, SEQ ID NO: 74, SEQ ID NO: 74 with at least one conservative amino acid substitution, SEQ ID NO: 76 and SEQ ID NO: 76 with at least one conservative amino acid substitution.
53. An antibody which specifically binds to an immunogenic polypeptide of claim 52.
54. A method for producing a lecithin:cholesterol acyltransferase-like polypeptide or an acyl CoA:cholesterol acyltransferase-like polypeptide comprising culturing a host cell of claim 40 under conditions permitting expression of said lecithin:cholesterol acyltransferase-like polypeptide or acyl CoA:cholesterol acyltransferase-like polypeptide.
55. The method of claim 54, further comprising isolating the cholesterol acyltransferase-like polypeptide from the host cell or from the medium in which the host cell is cultured.
56. A method for modifying the sterol content of a host cell, comprising transforming a host cell with a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide and culturing said host cell under conditions wherein said host cell expresses a lecithin:cholesterol acyltransferase-like polypeptide such that said host cell has a modified sterol composition as compared to host cells without the recombinant construct.
57. The method of claim 56, wherein said lecithin:cholesterol acyltransferase-like polypeptide is a plant lecithin:cholesterol acyltransferase-like polypeptide.

58. A method for modifying the sterol content of a host cell, comprising transforming a host cell with a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide and culturing said host cell under conditions wherein said host cell expresses an acyl CoA:cholesterol acyltransferase-like polypeptide such that said host cell has a modified sterol composition as compared to host cells without the recombinant construct.
59. The method of claim 58, wherein said acyl CoA:cholesterol acyltransferase-like polypeptide is a plant acyl CoA:cholesterol acyltransferase-like polypeptide.
60. The method of claim 56, wherein said modified sterol composition is an increase in sterol esters.
61. The method of claim 58, wherein said modified sterol composition is an increase in sterol esters.
62. The method of claim 56, wherein said polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide is selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 73 and 75.
63. The method of claim 58 wherein said polynucleotide encoding a acyl CoA:cholesterol acyltransferase-like polypeptide is SEQ ID NO 33 OR 42.
64. The method of claim 56, wherein said regulatory sequence comprises a constitutive promoter.
65. The method of claim 58, wherein said regulatory sequence comprises a constitutive promoter.
66. The method of claim 56, wherein said regulatory sequence is an inducible promoter.
67. The method of claim 58, wherein said regulatory sequence is an inducible promoter.

68. The method of claim 56, wherein said regulatory sequence is a tissue specific promoter.
69. The method of claim 58, wherein said regulatory sequence is a tissue specific promoter.
70. The method of claim 56, wherein said regulatory sequence is a seed specific promoter.
71. The method of claim 58, wherein said regulatory sequence is a seed specific promoter.
72. The method of claim 56, wherein said polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide is in the antisense orientation.
73. The method of claim 58, wherein said polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide is in the antisense orientation.
74. The method of claim 72, wherein said modified sterol composition is a decrease in sterol esters.
75. The method of claim 73, wherein said modified sterol composition is a decrease in sterol esters.
76. A plant comprising a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide wherein expression of said recombinant construct results in modified sterol composition of said plant as compared to the same plant without said recombinant construct.
77. The plant of claim 76, wherein said lecithin:cholesterol acyltransferase-like polypeptide is a plant lecithin:cholesterol acyltransferase-like polypeptide.



78. The plant of claim 76, wherein said polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide is selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 73 and 75.
79. A plant comprising a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide wherein expression of said recombinant construct results in modified sterol composition of said plant as compared to the same plant without said recombinant construct.
80. The plant of claim 79, wherein said acyl CoA:cholesterol acyltransferase-like polypeptide is a plant acyl CoA:cholesterol acyltransferase-like polypeptide.
81. The plant of claim 79, wherein said polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide is SEQ ID NO: 33 or 42.
82. The plant of claim 76, wherein said regulatory sequence comprises a tissue specific promoter.
83. The plant of claim 79, wherein said regulatory sequence comprises a tissue specific promoter.
84. The plant of claim 76, wherein said regulatory sequence comprises a seed specific promoter.
85. The plant of claim 79, wherein said regulatory sequence comprises a seed specific promoter.
86. The plant of claim 76, wherein said modified sterol composition is an increase in sterol esters.
87. The plant of claim 79, wherein said modified sterol composition is an increase in sterol esters.

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88. The plant of claim 76, wherein the polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide is in the antisense orientation.
89. The plant of claim 79, wherein the polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide is in the antisense orientation.
90. An oil obtained from the plant of claim 76 or 79.
91. A method for producing an oil with a modified sterol composition comprising, providing a plant of claim 76 or 79 and extracting the oil from said plant.
92. An oil produced by the method of claim 91.
- 5 93. A method for altering oil production by a host cell comprising, transforming a host cell with a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide and culturing said host cell under conditions wherein said host cell expresses a lecithin:cholesterol acyltransferase-like polypeptide such that said host cell has an altered oil production as compared to host cells without the recombinant construct.
94. The method of claim 93, wherein said lecithin:cholesterol acyltransferase-like polypeptide is a plant lecithin:cholesterol acyltransferase-like polypeptide.
- 5 95. A method for altering oil production by a host cell comprising, transforming a host cell with a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide and culturing said host cell under conditions wherein said host cell expresses an acyl CoA:cholesterol acyltransferase-like polypeptide such that said host cell has an altered oil production as compared to host cells without the recombinant construct.
96. The method of claim 95, wherein said acyl CoA:cholesterol acyltransferase-like polypeptide is a plant acyl CoA:cholesterol acyltransferase-like polypeptide.

97. The method of claim 93, wherein said oil production is increased.
98. The method of claim 95, wherein said oil production is increased.
99. The method of claim 93, wherein said host cell is a plant cell.
100. The method of claim 95, wherein said host cell is a plant cell.
101. The method of claim 93, wherein said polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide is selected from the group consisting of SEQ ID NO: 2, 4, 6, 8, 10, 11, 73 and 75.
102. The method of claim 95, wherein said polynucleotide encoding an acyl CoA:cholesterol acyltransferase-like polypeptide is SEQ ID NO: 33 or 42.
103. The method of claim 93, wherein said regulatory sequence is a tissue specific promoter.
104. The method of claim 95, wherein said regulatory sequence is a tissue specific promoter.
105. The method of claim 93, wherein said regulatory sequence is a seed specific promoter.
106. The method of claim 95, wherein said regulatory sequence is a seed specific promoter.
107. A plant comprising a recombinant construct containing a regulatory sequence operably linked to a polynucleotide encoding a lecithin:cholesterol acyltransferase-like polypeptide wherein expression of said recombinant construct results in an altered production of oil by said plant as compared to the same plant without said recombinant construct.

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